

## Catastrophic Gastrointestinal Bleeding: Always Consider Meckel's Diverticulum

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### ABSTRACT

Meckel's diverticulum, a congenital malformation of the gastrointestinal tract, is asymptomatic in the majority of patients but can be associated with some complications. Gastrointestinal bleeding is one such complication and is more common in children than in adults. Despite the variety of examinations available, diagnosis can be difficult, especially in older patients, because the sensitivity of examinations decreases with patient age. Here we present the case of a young man with gastrointestinal bleeding in whom a diagnosis of Meckel's diverticulum was made intra-operatively.

### LEARNING POINTS

- Meckel's diverticulum is more commonly found in children than in adults and can cause gastrointestinal bleeding.
- The diagnosis of Meckel's diverticulum can be complicated, especially in adults because the sensitivity of examinations decreases with patient age.
- Despite appropriate diagnostic evaluation, Meckel's diverticulum is sometimes only diagnosed at surgery.

### KEYWORDS

Systemic lupus erythematosus, antiphospholipid antibodies, aPTT

### INTRODUCTION

Meckel's diverticulum (MD) is a congenital malformation of the gastrointestinal (GI) tract found in 2–4% of the population<sup>[1]</sup>. It results from incomplete obliteration of the vitelline duct between the 7th and 8th weeks of gestation<sup>[2]</sup> and is most commonly located in the ileum, 45–60 cm proximal to the ileocaecal valve, on the antimesenteric border<sup>[3]</sup>.

MD is usually asymptomatic, but complications can occur and are more frequent in childhood. Patients can present with GI haemorrhage, intestinal obstruction or diverticulitis. The diagnosis is sometimes difficult, especially in adults<sup>[4]</sup>. Radiography, contrast bowel studies, arteriography and CT scanning have low specificity<sup>[5]</sup>. Technetium-99m pertechnetate scintigraphy is the best method for diagnosis, as it has an accuracy of 83–88%, a sensitivity of more than 85% and a specificity of over 95%. However, sensitivity decreases with patient age<sup>[4]</sup>. Treatment of asymptomatic cases is controversial, but surgical resection is recommended for symptomatic MD.

## CASE DESCRIPTION

An 18-year-old man presented to the emergency department (ED) with traumatic brain injury after syncope. He had a medical history of rectal bleeding in the last 3 months. He had already undergone endoscopic evaluation with upper endoscopy, colonoscopy and capsule endoscopy which were all inconclusive. An autoimmune study and abdominal scintigraphy were negative.

Upon admission, the patient was tachypnoeic (24 breaths/min) and had significant orthostatic hypotension. Abdominal examination revealed mild and tender abdominal distension, without rebound or guarding, and normal bowel sounds. Digital rectal examination revealed no mass or tenderness, but dark-red blood coated the examination glove. In the ED, the patient became more unstable, tachycardic (100–107 bpm) and hypotensive (74/46 mmHg), with mottled skin and diaphoresis. Another episode of syncope occurred after profuse haematochezia. Laboratory analysis revealed a drop of 6.0 g/dl since the initial evaluation of haemoglobin (13.3 to 7.5 g/dl). Platelet count was 171,000, prothrombin time was 15.4 seconds and partial thromboplastin time was 29.9 seconds. The patient was treated with intravenous fluids, packed red blood cell (RBC) transfusion and intravenous proton pump inhibitors. An upper endoscopy did not show a bleeding site.

[Q3]On the third day of admission, the patient developed haemodynamic instability due to the persistence of rectal bleeding, with a drop in haemoglobin to 5.1 g/dl, a reduction in platelet count to 98,000 and an INR of 1.5. He was admitted to the intensive care unit because of hypovolaemic shock, and received fluids and transfusion support with RBC and fresh frozen plasma. However, GI bleeding continued, so mesenteric angiography was performed but did not show active contrast extravasation. A retrograde double balloon enteroscopy was carried out with exploration of the colon and small bowel until 20 cm from the ileocaecal valve, but was also inconclusive. After enteroscopy, the patient developed massive rectal bleeding with haemodynamic instability that progressed to haemorrhagic shock. An emergent laparotomy was performed to identify the cause of bleeding, and revealed a small bowel diverticulum on the antimesenteric border (Fig. 1). It was located 130 cm from the ileocaecal valve and had a wide base and a palpable mass at the tip. Downstream, the bowel was markedly dilated and filled with haematic content. An enteric segmental surgical excision encompassing the diverticulum was performed with a terminoterminal hand-sewn single-layered extra-mucosal continuous anastomosis.



Figure 1. Small bowel diverticulum on the antimesenteric border

In the post-operative period, the patient maintained haemodynamic stability with no evidence of blood loss and achieved restoration of bowel function on the fourth day after the initiation of oral fluid intake. Histopathological analysis was compatible with MD with ectopic gastric mucosa. After 6 months of follow-up, the patient was asymptomatic with no evidence of GI bleeding, normal bowel function and a normal haemoglobin level.

## DISCUSSION

GI bleeding is a common problem in the emergency department. The initial evaluation of patients with acute GI bleeding requires assessment of haemodynamic stability and resuscitation if necessary. A complete medical history should be taken and a careful physical examination carried out so an accurate differential diagnosis can be made<sup>[6]</sup>. Advances in endoscopic techniques in the last few years have improved diagnosis and treatment.

If the patient's clinical presentation (e.g., hematemesis and/or melena) is compatible with upper GI bleeding, an upper endoscopy should be performed. Erosive and ulceration lesions, as occur in peptic ulcer disease, vascular abnormalities and tumours can be identified and haemostatic treatment provided. If endoscopy does not reveal the source of bleeding or the patient has a clinical history compatible with lower GI bleeding (haematochezia or rectorrhagia), a colonoscopy should be performed<sup>[7]</sup>. In patients below the age of 50, the most frequent cause of bleeding is anorectal disease, with colorectal cancer being most common in older patients<sup>[8]</sup>. A full colonoscopy is important to identify other sources of bleeding such as inflammatory bowel disease, diverticula, ischaemic colitis or infection. When upper endoscopy and colonoscopy are inconclusive, the small bowel must be examined. For haemodynamically stable patients, capsule endoscopy (CE) is an option. For patients with haemodynamically significant bleeding, an urgent angiography is recommended for embolization. If these tests are negative and the patient is young, technetium-99m scintigraphy can be used to detect ectopic gastric mucosa (MD)<sup>[7,9]</sup>. If CE and scintigraphy are still inconclusive, enteroscopy can be performed to examine the small bowel mucosa and identify any lesions not seen on CE. If the source of bleeding is not identified by any of these methods, then a laparotomy can be considered<sup>[6]</sup>.

Less than 10% of symptomatic MD cases are diagnosed preoperatively. In our patient, despite appropriate evaluation, MD was only diagnosed at surgery<sup>[10]</sup>. Surgical resection is the treatment of choice for symptomatic MD and can be achieved by diverticulectomy or segmental bowel resection and anastomosis. The latter may be preferable if there is a risk of stenosis, a palpable mass or if the diverticulum has a wide neck (>2 cm)<sup>[11]</sup>. In our patient, two of these characteristics were present, so the surgical strategy chosen was segmental bowel resection and anastomosis.

The diagnosis of occult bleeding can be especially challenging. Although we have a variety of diagnostic methods, in some cases the aetiology of bleeding remains unclear and a laparotomy should be performed to identify the problem and avoid further complications. Our case shows that despite the condition being more prevalent in children, clinical suspicion of MD should be elevated in adult patients with lower GI haemorrhage.

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